

WHAT IS CLAIMED IS:

Sw 29

1. DNA encoding urocortin II selected from the group consisting of:

5 (a) isolated and purified DNA which encodes urocortin II protein;

(b) isolated and purified DNA which hybridizes at high stringency conditions to the antisense complement of the isolated DNA of (a) above, wherein high stringency conditions are  
10 characterized as membrane washing at high temperature and low salt concentration functionally equivalent to 0.1 x SSC at 65°C, wherein said DNA encodes urocortin II protein; and

(c) isolated and purified DNA differing from the isolated DNAs of (a) and (b) above in codon sequence due to the  
15 degeneracy of the genetic code, and which encodes urocortin II protein.

2. The DNA of claim 1, wherein said DNA encodes an urocortin II protein precursor peptide of amino acid sequence SEQ ID No: 10.

5 3. The DNA of claim 1, wherein said DNA encodes a urocortin II protein, wherein said protein has a amino acid sequence of SEQ ID No. 11.

10 *Sub 10* 4. A vector capable of expressing the DNA of claim 1 wherein said vector comprises said DNA and regulatory elements necessary for expression of said DNA in a cell.

15 5. The vector of claim 4, wherein said DNA encodes a urocortin II protein having the amino acid sequence shown in SEQ ID No: 11.

Suball

6. A host cell transfected with the vector of claim 4,  
said vector expressing urocortin II protein.

7. The host cell of claim 6, wherein said cell is  
5 selected from group consisting of bacterial cells, mammalian cells,  
plant cells and insect cells.

8. The host cell of claim 7, wherein said bacterial cell  
10 is *E. coli*.

9. Isolated and purified urocortin II protein coded for  
by DNA selected from the group consisting of:

(a) isolated and purified DNA which encodes urocortin  
15 II protein;

(b) isolated and purified DNA which hybridizes at high  
stringency conditions to the antisense complement of the isolated  
DNA of (a) above, wherein high stringency conditions are  
characterized as membrane washing at high temperature and low

salt concentration functionally equivalent to 0.1 x SSC at 65°C,  
wherein said DNA encodes urocortin II protein; and

(c) isolated and purified DNA differing from the  
isolated DNAs of (a) and (b) above in codon sequence due to the  
5 degeneracy of the genetic code, and which encodes urocortin II  
protein.

10. The isolated and urocortin II protein of claim 9  
10 having the amino acid sequence shown in SEQ ID No: 11.

11. An antibody directed against the urocortin II  
protein of claim 9.

15

12. The antibody of claim 11, wherein said antibody is  
a monoclonal antibody.

13. A pharmaceutical composition comprising the urocortin II protein of claim 9 and a pharmaceutically acceptable carrier.

5 14. A method of treating a pathophysiological state, comprising the step of administering the pharmaceutical composition of claim 13 to an individual in need of such treatment.

10 15. The method of claim 14, wherein said pathophysiological state is selected from the group consisting of high body temperature, appetite dysfunction, congestive heart failure, stress, anxiety, and undesirably low levels of ACTH secretion.

15

16. DNA encoding human urocortin-related peptide selected from the group consisting of:

(a) isolated and purified DNA which encodes a human urocortin-related peptide protein;

(b) isolated and purified DNA which hybridizes at high stringency conditions to the antisense complement of the isolated  
5 DNA of (a) above, wherein high stringency conditions are characterized as membrane washing at high temperature and low salt concentration functionally equivalent to 0.1 x SSC at 65°C, wherein said DNA encodes a human urocortin-related peptide protein; and

10 (c) isolated and purified DNA differing from the isolated DNAs of (a) and (b) above in codon sequence due to the degeneracy of the genetic code, and which encodes a human urocortin-related peptide protein.

15

17. The DNA of claim 16, wherein said DNA has the sequence shown in SEQ ID No:1.

18. The DNA of claim 16, wherein said DNA encodes a human urocortin-related peptide precursor protein of amino acid sequence SEQ ID No: 2.

5

19. The DNA of claim 16, wherein said DNA encodes a human urocortin-related peptide protein, wherein said protein has a amino acid sequence of SEQ ID No. 3.

10

20. A vector capable of expressing the DNA of claim 16 wherein said vector comprises said DNA and regulatory elements necessary for expression of said DNA in a cell.

15

21. The vector of claim 20, wherein said DNA encodes a human urocortin-related peptide protein having the amino acid sequence shown in SEQ ID No: 3.

22. A host cell transfected with the vector of claim 20,  
said vector expressing a human urocortin-related peptide protein.

23. The host cell of claim 22, wherein said cell is  
5 selected from group consisting of bacterial cells, mammalian cells,  
plant cells and insect cells.

24. The host cell of claim 23, wherein said bacterial  
cell is *E. coli*.

25. Isolated and purified human urocortin-related  
peptide coded for by DNA selected from the group consisting of:

(a) isolated and purified DNA which encodes a human  
urocortin-related peptide protein;

15 (b) isolated and purified DNA which hybridizes at high  
stringency conditions to the antisense complement of the isolated  
DNA of (a) above, wherein high stringency conditions are  
characterized as membrane washing at high temperature and low  
salt concentration functionally equivalent to 0.1 x SSC at 65°C,



wherein said DNA encodes a human urocortin-related peptide protein; and

(c) isolated and purified DNA differing from the isolated DNAs of (a) and (b) above in codon sequence due to the  
5 degeneracy of the genetic code, and which encodes a human urocortin-related peptide protein.

26. The isolated and purified human urocortin-related peptide protein of claim 25 having the amino acid sequence shown  
10 in SEQ ID No: 3.

27. An antibody directed against the human urocortin-related peptide protein of claim 25.

15  
28. The antibody of claim 27, wherein said antibody is a monoclonal antibody.

29. A pharmaceutical composition comprising the human urocortin-related peptide protein of claim 25 and a pharmaceutically acceptable carrier.

5

30. A method of treating a pathophysiological state, comprising the step of administering the pharmaceutical composition of claim 29 to an individual in need of such treatment.

10

31. The method of claim 30, wherein said pathophysiological state is selected from the group consisting of high body temperature, appetite dysfunction, congestive heart failure, stress, anxiety, and undesirably low levels of ACTH secretion.

15

32. A modified protein, wherein said protein is selected from the group consisting of urocortin II and human urocortin-related peptide.

20

33. The protein of claim 32, wherein said protein has been mutated to contain a tyrosine residue.

34. The protein of claim 32, wherein said protein has  
5 been modified by an addition of a sequence consisting of Tyr-Gly to the N-terminal end of said protein

35. The protein of claim 32, wherein said protein has been modified by an N-terminal deletion, wherein said deletion  
10 comprises amino acids selected from the group consisting of the first amino acid, the first and second amino acids, the first through third amino acids, the first through fourth amino acids, and the first through fifth amino acids.

15 36. The protein of claim 32, wherein said protein is selected from the group consisting of proteins of sequence SEQ ID No. 3 and SEQ ID No. 11 and wherein an isoleucine residue corresponding to position 9 of said is replaced with a "D-form" isomeric amino acid.

37. The protein of claim 36, wherein said "D-form" isomeric amino acid is selected from the group consisting of D-isoleucine, D-phenylalanine, and D-leucine.

5 38. The protein of claim 32, wherein said protein is selected from the group consisting of urocortin II of sequence SEQ ID No. 11 and human urocortin-related protein of sequence SEQ ID No. 11, wherein a glutamic acid residue corresponding to position 17 of said protein is replaced with D-glutamic acid.

10 39. The protein of claim 32, wherein amino acids are replaced with nonstandard amino acids known in the art.

15 40. The protein of claim 39, wherein said nonstandard amino acid are selected from the group consisting of C<sub>α</sub>-methylated leucine, C<sub>α</sub>-methylated alanine, N-im-benzylhistidine, 4-hydroxyproline, 5-hydroxylysine, 3-methylhistidine, homoserine, and ornithine.

41. The protein of claim 32, wherein said protein has been acylated at the N-terminus of said protein.

42. The protein of claim 32, wherein said protein is  
5 acylated with a fatty acid.

43. The protein of claim 32, wherein said protein has been modified to contain a fluorescent label.

10 44. A conjugate of the protein of claim 32 linked to a toxin.

45. A conjugate of the protein of claim 32 with a complexing agent for radionuclides.

15

46. The conjugate of claim 45 complexed with a radionuclide.